William Chargin

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Computer Science, Cal Poly San Luis Obispo

Please visit my website at git.io/wc for an interactive CV,
and more up-to-date and detailed project descriptions.

Experience

Course Assistant — **Cal Poly CS Department**
Dr. Kurt Mammen, CSC 102 (Fundamentals of Computer Science) — *Fall 2014–present*

- Designed, implemented, tested, and documented a flexible and extensible auto-grading system.
- Created grading scheduler, and integrated with `cron` to create a completely "hands-off" grading process.
- Fully documented, with a proper `man` page as well as user guide for instructors and graders.
- Please visit my website for more information on this project.

Army High Performance Computing Research Center — **Stanford University**
Student Researcher — *June–August 2014*

- Worked and studied at the AHPCRC Summer Institute for eight weeks.
- First pre-undergraduate student ever admitted to the program.
- Studied diverse topics in computer science, mathematics, and engineering/computational geometry.
- Developed real-time physics simulations on low-powered portable devices. (See *Projects* below.)
- Received verbal commendation on excellence of research report.

Model United Nations (League of Creative Minds) — **Burlingame, CA**
Head Delegate; Undersecretary-General of Technology and Innovation — *2011–2014*

- Ran technology (mainly AV, networking, communications) for about a dozen conferences over three years.
- Developed a unified debate management system, facilitating timing, voting, speech analysis, etc. (see below).
- Delivered technical and scientific briefings to students.
- Received the Model Diplomat award for my contributions in technology.

Projects

Real-time portable physics

While working at AHPCRC, I developed real-time physics simulations on low-powered Android tablets. My work included articulated rigid body, cloth, smoke, and dynamic paint simulations. I also implemented such rendering features as UV mapped textures and fog. I designed a novel algorithm for placing points on a 3D triangulated mesh according to a given density function. Finally, I designed a system to efficiently simulate arbitrarily complex urban environments.

Advanced computer science curriculum

During my senior year of high school, I pursued college-level computer science coursework in an independent study designed by a full-time Microsoft Software Engineer. My studies included: basic algorithms and data structures (implementing searching and sorting, trees, disjoint sets, graphs, hash tables, and more); concurrency (e.g., synchronization, semaphores, mutexes); dynamic programming; bit operations; image edge detection; and more. I used a public repository at `github.com/WChargin/apcs` for my projects; interactive demos available there.

Model United Nations moderation system

Technology problems often plague Model UN conferences. To address this, I created and deployed an application system that unifies the tools that chairs need to aptly moderate debates. My system has

been used at multiple conferences, by dozens of chairs and hundreds of delegates. Since its initial release, I have accepted and incorporated many suggestions, from simple UI tweaks to integration with software suites such as Google Docs. It is open source and available at `wchargin.github.io/kiosk/`.

Introductory game development library

I designed and implemented the Java library JGame to enable students to focus on learning computer science and game development concepts instead of worrying about idiosyncratic implementation details. My framework is widely used by students at my high school; some student projects based on my library are public at `bit.ly/jgameprojects`. JGame projects are cross-platform and work as both desktop applications or web applets. JGame is open-source and available at `wchargin.github.io/JGame`.

Selected computer languages and systems

Java 6/7 and Eclipse: Expert
HTML/CSS: Advanced
TEX and LATEX: Comfortable
Blender 3D: Advanced
Python 2, 3: Advanced
C: Proficient
Vim: Love it
Git and GitHub: Proficient

Academic honors

- Honors Program, Cal Poly San Luis Obispo
- National Merit Scholar
- National AP Scholar
- Valedictorian
- Inter-Departmental Award (first ever)
- Most Outstanding Math and Science Student
- Best Delegate (WEMUN 2011, Beijing)
- Model Diplomat (LCMMUNC 2013)

References

Arvind Shrihari

`arvindshrihari@outlook.com`

Mr. Shrihari is a Software Development Engineer at Microsoft; he also co-teaches the AP Computer Science course at my high school. He designed and supervised my independent study.

Eric Ettlin

`mrumrocks@gmail.com`

Mr. Ettlin teaches a variety of web design and computer science courses at my high school. His students use my JGame library for game development projects. His website is `www.mrumrocks.org`.

Stephanie Finander

`sfinande@seq.org`

Ms. Finander currently teaches AP Calculus BC and AP Physics C: Mechanics classes at my high school. I took both these courses as a junior and was a peer tutor for AP Calculus BC as a senior.